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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/554,051

11/06/2006

Volker Krink

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EXAMINER

PASCHALL, MARK H

ART UNIT

PAPER NUMBER

3742

MAIL DATE

DELIVERY MODE

03/17/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/554,051	<b>Applicant(s)</b> KRINK ET AL.	
	<b>Examiner</b> Mark H. Paschall	<b>Art Unit</b> 3742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12-16-2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0,194,634 in view of Kamp et al 4,992,642. EP teaches a plasma arc torch nozzle 18 which has a thin coating of a nitride on nozzle portions, as claimed to reduce erosion of the nozzle. It is obvious that the nitriding process to coat the nozzle, copper, are micro particles which are embedded in the copper, since nitriding is a process which injects

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particles into the substrate. Use of a particular particle size as set forth in the dependent claims is considered a choice well within the skill level of the artisan, dependent on undisclosed parameters such as power levels and gases used in the torch operation. As per claim 12 the nozzle is copper. As per claim 15 is also an obvious choice to clean the nozzle and shape it to the desired shape, such steps conventional in the machining art of metal coating. In addition, the patent to Kamp et al has been applied for evidencing that a plasma nozzle can be formed of boron nitride, as presently claimed. Use of the same leads to a more durable nozzle and in view of this teaching one of ordinary skill in plasma torches would have been motivated to use a nozzle of boron nitride, exclusively, to achieve a more durable nozzle, less reflective of erosion from the heat. It is inherent that the particles are uniformly distributed in the nozzle, since the nozzle is entirely formed from boron nitride.

Basically claim 1 defines a nozzle, with wear resistant micro particles embedded in metal. Ep 634' clearly teaches a nozzle with a coating which is nitrified on the metal. The artisan that in addition to nitrifying comprising injecting of particles into a metal surface, the transition area between the coating and the substrate, metal, is a rough interface with particles of the coating embedded into the metal and vice-versa. It is clear that some particles will be embedded into the metal of the nozzle. The claims are silent as to the degree of embedding or the uniformity of embedding; only mentioning embedding of particles into a metal. It is submitted that any coating would lead to

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embedded particles into the coating substrate, since if the embedding was not present then the coating would literally fall off of the substrate.

Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ep 634 in view of Kamp et al, as above, further in view of Bernard et al 3,597,576. Ep as modified, teaches a nozzle with embedded particles, as claimed, with the particles distributed uniformly within the encompassing metal. The amended claims define an integral nozzle and in this respect the patent to Bernard et al is applied for teaching nozzle 52, comprised of tungsten carbide. Since the material is uniform and integrally formed into the nozzle, it is obvious that an integrally formed nozzle for a torch comprising tungsten and carbide particles is conventional and in view of this teaching it would have been obvious to modify the EP system with a nozzle formed of wear resistant micro-particles, to afford maximum protection of the torch components, specifically the nozzle.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-15 have been considered but are moot in view of the new ground(s) of rejection.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark H. Paschall whose telephone number is 571 272-4784. The examiner can normally be reached on 7am - 3pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tu Hoang can be reached on 571-272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Mark H Paschall  
Primary Examiner  
Art Unit 3742

Mhp

***/Mark H Paschall/  
Primary Examiner, Art Unit 3742***